

## **TRAINING ON THE USE OF ARTIFICIAL INTELLIGENCE FOR MSMES: ENHANCING FINANCIAL EFFICIENCY IN THE DIGITAL ERA IN NORTH KEMBANGAN VILLAGE**

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### **ABSTRACT**

In the digital era, Artificial Intelligence (AI) offers significant potential to enhance the competitiveness of Micro, Small, and Medium Enterprises (MSMEs), particularly in financial management and marketing strategies. However, AI adoption among MSMEs remains low, especially at the local level. In North Kembangan Village, West Jakarta, most MSMEs still rely on traditional promotional and inventory methods, limiting business growth and efficiency. To address this gap, a Data Science Training program was implemented to improve MSMEs' digital capabilities. The training focused on basic data literacy, customer data processing, sales trend analysis, and the use of tools such as Excel, Google Sheets, Google Trends, and Meta Ads. Participants also learned how to apply simple dashboards and A/B testing to evaluate marketing effectiveness. The program successfully enhanced participants' understanding of data-driven strategies and encouraged the shift toward digital transformation. It also fostered a supportive ecosystem through mentoring and peer collaboration, aiming for long-term sustainability in digital adoption among local MSMEs.

**Keywords:** Artificial Intelligence, Digital Transformation, Data Science, Community Training.

### **1. INTRODUCTION**

In the rapidly evolving digital era, the utilization of information technology has become a crucial necessity for enhancing the competitiveness of Micro, Small, and Medium Enterprises (MSMEs). One of the technologies increasingly adopted across various sectors is Artificial Intelligence (AI). This technology can assist business owners in managing financial data, analyzing sales trends, and formulating more effective and efficient marketing strategies. However, in reality, the adoption of AI among MSMEs remains relatively low, particularly at the local level. The development of digital technology, which is reshaping the business landscape, has encouraged MSMEs to begin engaging in digital transformation (Verhoef et al., 2021). While digital technology holds significant potential to support MSME advancement, implementing digital solutions requires careful consideration to ensure they align with the businesses' needs and capacities (Crupi et al., 2020). Digitalization among MSMEs still lags behind the average level of digital adoption in other industrial sectors (Gierlich et al., 2019). Conversely, the capabilities of digital platforms have an indirect positive impact on improving MSME performance (Cenamor et al., 2019). According to Mohamad Torik Langlang Buana and Yananto Mihadi Putra, the community service they carried out involved training on restoring used food covers (tudung saji). This restoration is an effort to reduce unused items by turning them into useful goods once again. Through this restoration activity, participants can enhance their creativity in designing and selecting the results they wish to create. The restored items can also become a source of income for women who initially only intended to restore used food covers for local residents, or they can even sell them again (Mohamad Torik Langlang Buana dan Yananto Mihadi Putra, 2021). According to Riri Fajriah, the research conducted to support the economic recovery of MSME business actors in the Meruya Utara Subdistrict involved providing socialization and training to the PKK Cadre team, who act as mentors in promoting family welfare. The socialization and training focused on strategies for creating creative content for product marketing through digital platforms, particularly social media, to enhance product promotion (Riri Fajriah, 2022).

North Kembangan Village, located in Kembangan District, West Jakarta, covers an area of approximately 3.64 km<sup>2</sup> and has a population of around 59,830 people (Pangastuti et al., 2023)(Wikipedia, 2025). The population reaches around 59,830 people, most engaged in the private sector and entrepreneurship. Many Micro, Small, and Medium Enterprises (UMKM) are engaged in the culinary, fashion, and handicraft sectors (Wibowo et al., 2021). One of the main challenges for UMKM in North Kembangan Village is the lack of data utilization in promotional strategies (Dan et al., 2024). Most business people still rely on conventional marketing methods, such as word-of-mouth and direct sales at bazaars or small shops. This hampers the potential for business growth because they have not been able to optimize data-based marketing strategies.

The conditions in the upstream business sector show that raw material sources still depend on traditional markets and local suppliers around West Jakarta. A lack of stock recording and inventory management challenges production planning and market demand analysis (LPKN, 2025). In addition, limited business capital remains a significant obstacle, although the government has provided support through issuing Business Identification Numbers (NIB). Access to funding is still difficult to obtain, thus hampering sustainable business growth.

On the downstream side, marketing and sales strategies still face various challenges. Most MSMEs have not utilized data analytics to determine more effective promotional strategies. A lack of understanding of consumer behavior causes marketing strategies to often be carried out through trial and error (Laiya, 2025). In addition, the use of social media and digital platforms is still not optimal due to limitations in understanding market segmentation and the effectiveness of digital advertising. The lack of access to significant marketplaces also limits customer reach, so the potential for market growth is not yet optimal (Ramadhani et al., 2025).

Data Science Training Activities for Promotion Strategy Management in North Kembangan Village aims to empower Micro, Small, and Medium Enterprises (UMKM) by utilizing Data Science in digital marketing strategies. This training aims to improve UMKM understanding of Data Science and its application in business, especially in digital-based marketing strategies (Marjukah et al., 2023). By understanding data analysis, UMKM can increase their competitiveness in the digital era by understanding market trends and consumer behavior, making promotional strategies more effective and targeted. In addition, this training will improve UMKM data literacy by providing a basic understanding of customer data processing and sales trend analysis using tools such as Excel, Google Sheets, or Python. Participants will also be introduced to data-based digital marketing, including using Google Trends, Google Analytics, and Meta Ads to understand consumer behavior patterns and optimize social media as a marketing tool. This training also aims to help UMKM make data-based decisions by studying the analysis of promotional effectiveness through a simple dashboard and applying the A/B Testing concept in digital marketing strategies. In addition, this program encourages the formation of a digital-based UMKM ecosystem through a community that can share experiences and successful strategies. To ensure sustainable implementation, this training will also facilitate mentoring and monitoring for participants so that they can apply the knowledge they have learned in their business (Nurfitriya et al., 2022).

## 2. METHOD

### A. Stages of Community Service Implementation

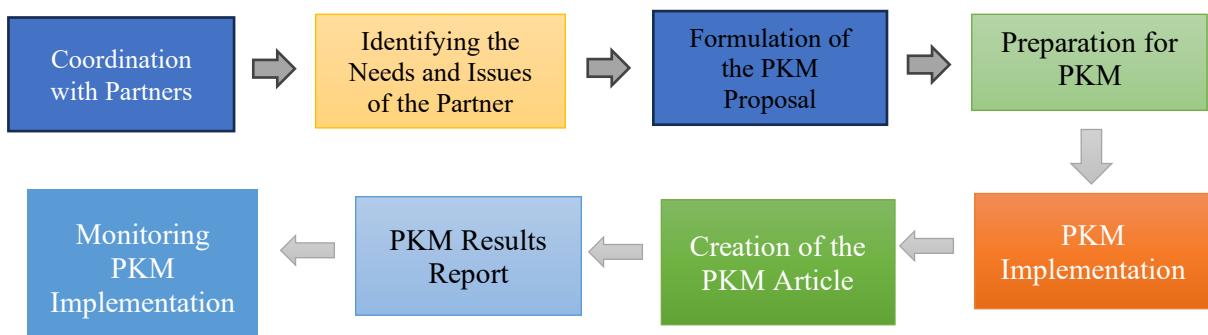


Figure 1. Flowchart of Community Service Implementation Process

Explanation:

#### a. Coordination with Partners

Coordination was carried out with the Kembangan Utara Subdistrict Office by identifying MSMEs or community groups engaged in raw material management (e.g., culinary businesses, handicrafts, laundry services, etc.). This stage aimed to determine the schedule, location, and technical aspects of the program implementation.

#### b. Needs and Problem Identification

This phase involved identifying the methods currently used by partners to record inventory, the main challenges they face in managing raw materials—such as sudden stock shortages or inefficient use of materials—and assessing their understanding of basic data concepts and simple digital technology usage.

c. Proposal Development

Development of the Community Service (PKM) proposal, including the preparation of a training module focused on basic data science concepts such as data analysis and visualization.

d. Preparation for Program Implementation

This included the drafting and printing of training modules, development or modification of a data-based inventory application, preparation of attendance sheets, pre-test and post-test forms, training logistics, scheduling of activities, and arrangement of the training venue.

e. Program Implementation

The training covered an introduction to basic data concepts such as stock levels, trends, and expenditures; training in the use of inventory management applications supported by a data science approach; and simulation and hands-on practice sessions in which partners applied the system using real data from their businesses.

f. Monitoring Program Implementation

This included providing assistance in case of technical issues during implementation, documenting the process, and gathering feedback from partners. It also involved compiling a narrative report covering inputs, processes, outputs, and outcomes of the activity.

g. Preparation of Scientific Publication

The final step involved drafting and submitting a scientific article for publication in a community service journal.

**B. Partner Participation in Program Implementation**

- Understanding of basic data concepts
- Use of stock dashboards based on spreadsheets or simple applications
- Hands-on practice using real business data

**C. Program Evaluation**

- Initial Survey (Pre-test): Assessed participants' basic understanding of inventory management and data concepts.
- Validation of Partner Needs: Conducted through early-stage discussions and observations.
- Training Satisfaction Questionnaire: Measured satisfaction with materials, facilitators, and media used.
- Visual Documentation: Included photos, videos, and spontaneous testimonials from participants.

**3. RESULTS AND DISCUSSION**

The implementation of this community service activity began with identifying several factors that hinder the growth and progress of Micro, Small, and Medium Enterprises (MSMEs) in increasing their profits. The focus areas of this program included providing participants with an initial understanding of Artificial Intelligence (AI), its basic functions, strategies for managing promotions, application-based inventory management, steps toward digital transformation, proper and organized financial record-keeping, and methods for identifying the appropriate target market for each business.

The activity was conducted offline (in-person) in North Kembangan Subdistrict and was attended by 30 selected MSME participants. The community service program was carried out in two main stages: the coordination stage and the implementation stage. During the coordination stage, the organizing team established communication with partner stakeholders to identify the key problems being faced. Based on this coordination, it was agreed that the program would be conducted in collaboration with the Head of North Kembangan Subdistrict and scheduled to take place on Saturday, May 17, 2025, from 08:00 AM to 04:00 PM WIB. All necessary facilities, including a projector and training venue located within the North Kembangan Subdistrict office, were provided by the local partners.



Figure 2. Group photo

Figure 1 shows a group photo taken before the commencement of the activity, featuring representatives from the subdistrict office, academic members of Universitas Mercu Buana, and MSME participants from North Kembangan.



Figure 3. Community Service Activities Together with MSMEs

Figure 2 illustrates the active participation of MSME actors in the training activity, which aimed to expand their understanding of Artificial Intelligence (AI) and its potential to drive increased business profitability.

The AI utilization training for Micro, Small, and Medium Enterprises (MSMEs), held in North Kembangan Subdistrict, resulted in several significant outcomes:

a. Improved Digital Literacy

The training successfully enhanced participants' understanding of fundamental AI concepts, its relevance to business activities, and its applications in financial management.

b. Ability to Use AI-Based Tools

Most participants demonstrated the ability to operate basic AI-powered applications, such as automated financial recording tools and daily financial report analysis dashboards.

c. Shift in Mindset Toward Business Digitalization

Participants showed a notable shift in perspective regarding the importance of digital transformation not only for promotional purposes but also for achieving greater efficiency and accuracy in financial decision-making.

To assess the effectiveness of the training, evaluations were conducted using several key indicators, through both direct observation and the distribution of pre-test and post-test questionnaires. The results by indicator are as follows:

### 1. Understanding of Basic AI Concepts

Indicator: Participants were able to explain the fundamental functions of AI in business.

Results:

- Before training: Only 22% of participants understood the concept of AI.
- After training: Increased to 87%.
- Analysis: There was a significant improvement in participants' comprehension of AI and its business applications.

### 2. Ability to Use Basic AI Tools

Indicator: Participants could operate AI-based financial recording applications (e.g., BukuKas, AI-based MSME accounting tools).

Results:

- 75% successfully performed transaction recording simulations using the introduced tools.
- 65% were able to independently interpret cash flow and profit/loss reports.
- Analysis: The training was effective in delivering practical technical skills that could be applied directly in business operations.

### 3. Mindset Shift Toward Digitalization

Indicator: Participants' responses to questions regarding the importance of business digitalization after the training.

Results:

- 91% indicated they were motivated to shift from manual to digital financial recording.
- 83% expressed willingness to try new data-driven approaches.
- Analysis: A positive change in mindset occurred regarding the importance of digital transformation.

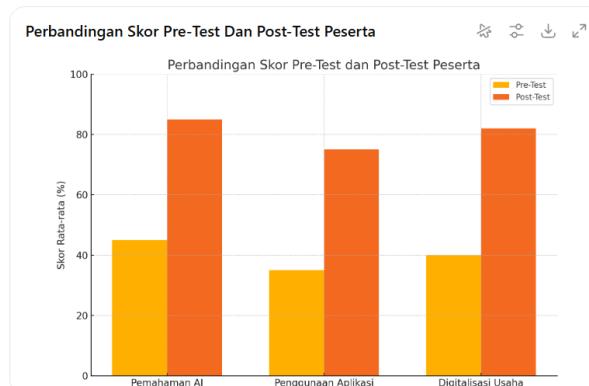


Figure 4. Comparison of Participants' Average Pre-test and Post-test Scores

Figure 3 illustrates a significant increase across three key aspects:

- AI Understanding: from 45% to 85%
- Application Usage: from 35% to 75%
- Business Digitalization: from 40% to 82%

## 4. CONCLUSION

The Community Service activity conducted in Kembangan Utara Subdistrict, focusing on enhancing the capacity of Micro, Small, and Medium Enterprises (MSMEs) through the utilization of Artificial Intelligence (AI), was successfully implemented and achieved significant outcomes. This initiative aimed to address various challenges faced by MSMEs, particularly in the areas of digital transformation, operational efficiency, financial management, and promotional strategies.

The training, conducted offline and attended by local MSME participants, effectively improved their digital literacy, equipped them with practical skills in using AI-based applications, and fostered a mindset that is more open to

adopting technology in their business operations. The activity was carried out in two main phases—coordination and implementation and proceeded effectively with active support from local government partners.

Based on evaluations conducted through direct observation and the distribution of pre-test and post-test questionnaires, the following outcomes were observed:

- Improved Understanding of Basic AI Concepts: Prior to the training, only 22% of participants understood the fundamental concepts of AI. This figure increased significantly to 87% after the training, reflecting a marked improvement in digital literacy.
- Ability to Operate Basic AI Tools: Approximately 75% of participants were able to simulate transaction recording using AI-based applications, and 65% demonstrated the ability to independently interpret financial reports. This indicates the training's effectiveness in delivering applicable technical skills.
- Shift in Mindset Toward Business Digitalization: A total of 91% of participants expressed motivation to transition from manual to digital methods, while 83% stated their readiness to explore data-driven approaches. This shows a positive shift in mindset toward embracing technological advancements.

In conclusion, this community service initiative made a tangible contribution to enhancing MSME capacity, particularly in terms of digital technology adoption—an essential factor in increasing competitiveness and ensuring business sustainability in the era of Industry 4.0. The success of this program is expected to serve as a foundation for the development of similar initiatives in other regions or MSME sectors.

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